Question Paper Preview

Question Paper Name: Civil Engineering
Subject Name: Civil Engineering

Mathematics

Number of Questions: 50
Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 6780944604 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the traces of A and B are 20 and -8 then the trace of (A+B) is ___

Options :

1. 12
2. -12
3. 28
4. -28

Question Number : 2 Question Id : 6780944605 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A=\begin{bmatrix} x & 1 \\ 1 & 0 \end{bmatrix}$ is an involutory matrix then x=

Options :

1. 0
2. -2
3. -1
4. 2

Question Number : 3 Question Id : 6780944606 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The determinant of $\begin{bmatrix} \log e & \log e^2 & \log e^3 \\ \log e^2 & \log e^3 & \log e^4 \\ \log e^3 & \log e^4 & \log e^5 \end{bmatrix}$ is ___

Options :

1. 0
2. 1
3. $4\log e$
4. $5\log e$

Question Number : 4 Question Id : 6780944607 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A=\begin{bmatrix} 1 & 1 & 0 \\ 2 & 1 & 3 \\ 0 & 1 & 2 \end{bmatrix}$ then $\det(adjA) =$ ___

Options :

1. $\det A$
2. $\det A^2$
3. $-\det A$
4. $(\det A)^2$

Question Number : 5 Question Id : 6780944608 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If A, B are two matrices and $AB=B$, $BA=A$ then $A^2+B^2=$

Options :

1. $A+B$
2. $A-B$
3. AB
4. 0

Question Number : 6 Question Id : 6780944609 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\frac{3x+2}{(x+1)(2x^2+3)}=\frac{A}{x+1}+\frac{Bx+C}{2x^2+3}$, then $A+C-B=$ ___

Options :

1. 0
2. 2
3. 3
4. 5

Question Number : 7 Question Id : 6780944610 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\frac{3x}{(x-a)(x-b)}=\frac{2}{x-a}+\frac{1}{x-b}$ then $a:b=$ ___

Options :

1. $-2:1$
2. $2:1$
3. $1:2$
4. $3:1$

Question Number : 8 Question Id : 6780944611 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\tan 855°=$ ____

Options :

1. 1
2. $\frac{1}{\sqrt{2}}$
3. -1
4. $-\frac{1}{\sqrt{2}}$

Question Number : 9 Question Id : 6780944612 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\tan\alpha=\frac{m}{m+1}$ and $\tan\beta=\frac{1}{2m+1}$ then $\tan(\alpha+\beta)=$ ____

Options :

1. -1
2. 0
3. 1
4. 2

Question Number : 10 Question Id : 6780944613 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $6\sin 20° - 8\sin^3 20° =$

Options :

1. 2
2. $\frac{1}{\sqrt{2}}$
3. $\sqrt{3}$
4. $\frac{1}{\sqrt{3}}$

Question Number : 11 Question Id : 6780944614 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $3\sin\theta + 4\cos\theta = 5$ then the value of $4\sin\theta - 3\cos\theta =$

Options :

1. 0
2. -1
3. 1
4. 2

Question Number : 12 Question Id : 6780944615 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sine function with period 3 is

Options :

1. $sin\frac{2\pi x}{3}$
2. $sin\frac{\pi x}{3}$

3. $sin\ 3\pi x$

4. $sin\frac{3\pi x}{2}$

Question Number : 13 Question Id : 6780944616 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of $3\sin^2 x+5\cos^2 x$ is ____

Options :

1. 8

2. 3

3. 5

4. 34

Question Number : 14 Question Id : 6780944617 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation $\sqrt{3}\sin x+\cos x=4$ has ____

Options :

1. Only one solution

2. two solutions

3. Infinite solutions

4. no solution

Question Number : 15 Question Id : 6780944618 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\mathrm{Cos}^{-1}\left(\sqrt{3}x\right)+\mathrm{Cos}^{-1}x=\frac{\pi}{2}$ is ___

Options :

1. $\frac{1}{2}$

2. $\frac{1}{5}$

3. $-\frac{1}{2}$

4. $-\frac{1}{5}$

Question Number : 16 Question Id : 6780944619 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\sin\theta+\sin(\theta+120°)-\sin(120°-\theta)=$ _____

Options :

1. 0
2. $\sin\theta$
3. 1
4. $-\sin\theta$

Question Number : 17 Question Id : 6780944620 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The principal solution of $3\text{Cosec}A = 4\text{Sin}A$ is ____

Options :

1. $\frac{\pi}{4}$
2. $\pm\frac{\pi}{3}$
3. $\pm\frac{\pi}{6}$
4. $\pm 2\pi$

Question Number : 18 Question Id : 6780944621 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\left|z^2-1\right|=\left|z\right|^2+1.$ then z lies in ____

Options :

1. The real axis
2. a circle
3. The imaginary axis
4. a parabola

Question Number : 19 Question Id : 6780944622 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\left(\frac{1+i}{1-i}\right)^3-\left(\frac{1-i}{1+i}\right)^3=a+ib,$ then *a* an *b* are ____

Options :

1. 1,1
2. 2,-2
3. 0,-2
4. 0,-1

Question Number : 20 Question Id : 6780944623 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the line $y=2x+c$ is a tangent to $x^2+y^2=5$ then the value of *c* is ____

Options :

1. 2
2. 3
3. 4
4. 5

Question Number : 21 Question Id : 6780944624 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The vertex of the parabola $x^2+8x+12y+4=0$ is

Options :

1. $(-4,1)$
2. $(4,-1)$
3. $(-4,-1)$
4. $(4,1)$

Question Number : 22 Question Id : 6780944625 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of tangents to the ellipse $\frac{x^2}{4}+\frac{y^2}{2}=1$ through (2,1) is ____

Options :

1. 0

2. 1

3. 2

4. 3

Question Number : 23 Question Id : 6780944626 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the latus rectum of the hyperbola $x^2-4y^2=4$ is ____

Options :

1. 2

2. 1

3. 4

4. 3

Question Number : 24 Question Id : 6780944627 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the diameter of the circle $x^2+y^2-6x-8y=0$ is _____

Options :

1. 10

2. 15

3. 5

4. 20

Question Number : 25 Question Id : 6780944628 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the line $2y=5x+k$ touches the parabola $y^2=6x$ then k= ___

Options :

1. $\frac{2}{3}$

2. $\frac{4}{3}$

3. $\frac{3}{5}$

4. $\frac{6}{5}$

Question Number : 26 Question Id : 6780944629 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\lim_{x\to 2+} \frac{x|x-2|}{x-2} = \_\_\_\_\_$$

Options :

1. 1
2. -1
3. 2
4. -2

Question Number : 27 Question Id : 6780944630 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $f(x) = (1+x)^{\frac{2}{x}}$ is continuous at $x = 0$ then $f(0) = \_\_\_$

Options :

1. e
2. e^2
3. e^3
4. e^4

Question Number : 28 Question Id : 6780944631 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x = a\sec\theta, y = b\tan\theta$ then $\frac{dy}{dx} = \_\_\_\_$

Options :

1. $\frac{b}{a}\sec\theta$
2. $\frac{b}{a}\text{cosec}\,\theta$
3. $\frac{a}{b}\sec\theta$
4. $\frac{a}{b}\text{cosec}\,\theta$

Question Number : 29 Question Id : 6780944632 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x^y = e^{x-y}$ then $\frac{dy}{dx} =$ ____

Options :

1. $\frac{\log x}{(1+\log x)^2}$

2. $\frac{\log x}{(1-\log x)^2}$

3. $\frac{-\log x}{(1+\log x)^2}$

4. $\frac{-1}{(1+\log x)^2}$

Question Number : 30 Question Id : 6780944633 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \sin^{-1}\left(\frac{x}{\sqrt{1+x^2}}\right)$ then $\frac{dy}{dx} =$ ____

Options :

1. $-\frac{1}{1+x^2}$

2. $\frac{1}{1+x^2}$

3. $\frac{2}{1+x^2}$

4. $-\frac{2}{1+x^2}$

Question Number : 31 Question Id : 6780944634 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The slope of the normal to the curve $x = a\sec\theta, y = a\tan\theta$ at $\theta = \frac{\pi}{6}$ is ____

Options :

1. 2
2. 0
3. $-\frac{1}{2}$
4. 1

Question Number : 32 Question Id : 6780944635 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The rate of change of area of a circle with respect to radius when r=5cm is

Options :

1. 2π sq.cm/sec
2. 10π sq.cm/sec
3. 100π sq.cm/sec
4. 20π sq.cm/sec

Question Number : 33 Question Id : 6780944636 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following function has maxima or minima?

Options :

1. e^x
2. $\log x$
3. x^3+x^2+x+1
4. $\sin x$

Question Number : 34 Question Id : 6780944637 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the increase in the side of a square is 2% then the approximate percentage increase in the area of the square is _____

Options :

1. 2
2. 4
3. 6
4. 8

Question Number : 35 Question Id : 6780944638 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the function $f(x)=\log(x^2+y^2)$, which of the following is true?

Options :

1. $f_x+f_y=0$

2. $f_{xx}+f_{yy}=0$

3. $f_x-f_y=0$

4. $f_{xx}-f_{yy}=0$

Question Number : 36 Question Id : 6780944639 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\int \text{cosec}^5\theta\cot\theta d\theta =$ _____

Options :

1. $\frac{\cot^2\theta}{2}$

2. $\frac{-\text{cosec}^5\theta}{5}$

3. $\frac{\text{cosec}^6\theta}{6}$

4. $\frac{-\text{cosec}^6\theta}{6}$

Question Number : 37 Question Id : 6780944640 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\int_2^3 \frac{dx}{x^2-x} =$ ____

Options :

1. $\log\frac{2}{3}$

2. $\log\frac{4}{3}$

3. $\log\frac{8}{3}$

4. $\log\frac{1}{4}$

Question Number : 38 Question Id : 6780944641 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $a<0<b$ then $\int_a^b \frac{|x|}{x}dx =$ _____

Options :

1. $b-a$

2. $a-b$

3. $a+b$

4. 0

Question Number : 39 Question Id : 6780944642 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\int_0^1 x\tan^{-1}x dx =$ _____

Options :

1. $\frac{\pi}{4}-\frac{1}{2}$

2. $\frac{\pi}{8}-\frac{1}{2}$

3. $\frac{\pi}{4}+\frac{1}{2}$

4. $\frac{\pi}{8}+\frac{1}{2}$

Question Number : 40 Question Id : 6780944643 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\lim_{n\to\infty}\sum_{r=1}^{n}\frac{1}{n}e^{\frac{r}{n}} =$ _____

Options :

1. e

2. $(1+e)$

3. $(1-e)$

4. $(e-1)$

Question Number : 41 Question Id : 6780944644 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\int_0^{\pi/4} \sec^6 x dx = \_\_\_\_\_$$

Options :

1. $\frac{8}{3}$

2. $\frac{28}{15}$

3. $-\frac{28}{15}$

4. $\frac{4}{5}$

Question Number : 42 Question Id : 6780944645 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area bounded by the curve $y = \log x$, x-axis and the straight line $x - e = 0$ is _____square units

Options :

1. e

2. $(e-1)$

3. 0

4. $(1-e)$

Question Number : 43 Question Id : 6780944646 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The volume of the solid generated by rotating one arch of the curve $y = Sin3x$ about the x-axis is----

Options :

1. π^2

2. $\frac{\pi^2}{2}$

3. $\frac{\pi^2}{4}$

4. $\frac{\pi^2}{6}$

Question Number : 44 Question Id : 6780944647 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$y = cx - c^2$ is the general solution of the differential equation

Options :

1. $\left(\frac{dy}{dx}\right)^2 - x\left(\frac{dy}{dx}\right) + y = 0$

2. $\frac{d^2y}{dx^2} = 0$

3. $\frac{dy}{dx} = c$

4. $\left(\frac{dy}{dx}\right)^2 + x\left(\frac{dy}{dx}\right) + y = 0$

Question Number : 45 Question Id : 6780944648 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of the differential equation $\frac{dy}{dx} + \frac{y}{3} = 1$ is

Options :

1. $y = 3 + ce^{\frac{x}{3}}$

2. $y = 3 + ce^{-\frac{x}{3}}$

3. $3y = c + e^{\frac{x}{3}}$

4. $3y = c + e^{-\frac{x}{3}}$

Question Number : 46 Question Id : 6780944649 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation corresponding to the family of curves $y = ae^{bx}$, where *a* and *b* are arbitrary constants, is ____

Options :

1. $\frac{d^2y}{dx^2} = y\frac{dy}{dx}$

2. $y\frac{d^2y}{dx^2} - \frac{dy}{dx} = 0$

3. $y\frac{d^2y}{dx^2} = \left(\frac{dy}{dx}\right)^2$

4. $\frac{dy}{dx} - y^2 = 0$

Question Number : 47 Question Id : 6780944650 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An integrating factor of the differential equation $(x^2y + y + 1)dx + (x + x^3)dy = 0$ is __

Options :

1. e^x

2. x^2

3. $\frac{1}{x}$

4. x

Question Number : 48 Question Id : 6780944651 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation whose solution is $Ax^2 + By^2$, where A,B are arbitrary constants are of ----

Options :

1. 1^{st} order and 1^{st} degree

2. 2^{nd} order and 1^{st} degree

3. 2^{nd} order and 2^{nd} degree

4. 1^{st} order and 2^{nd} degree

Question Number : 49 Question Id : 6780944652 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of the differential equation $\frac{d^2x}{dt^2}-4\frac{dx}{dt}+5x=0$ is

Options :

1. $x=(c_1\cos t+c_2\sin t)e^{2t}$

2. $t=(c_1\cos x+c_2\sin x)e^{2x}$

3. $x=(c_1\cos 2t+c_2\sin 2t)e^{t}$

4. $t=(c_1\cos 2x+c_2\sin 2x)e^{x}$

Question Number : 50 Question Id : 6780944653 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The particular integral of $(D-2)^2y=\sin 2x$ is

Options :

1. $\frac{\cos 2x}{8}$

2. $\frac{\sin 2x}{8}$

3. $\frac{-\cos 2x}{2}$

4. $\frac{-\sin 2x}{2}$

Physics

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 51 Question Id : 6780944654 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit of impulse is the same as that of

Options :

1. moment of force
2. linear momentum
3. force
4. pressure

Question Number : 52 Question Id : 6780944655 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the force is given by $F = at+bt^2$ where t is the time. The dimensions of a and b are

Options :

1. MLT^{-4}, MLT^{-2}
2. MLT^{-3}, MLT^{-4}
3. ML^2T^{-3}, ML^2T^{-2}
4. ML^2T^{-3}, ML^3T^{-4}

Question Number : 53 Question Id : 6780944656 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Vector parallel to $6\hat{i} + 8\hat{j}$ and having a magnitude of 5 is

Options :

1. $4\hat{i} + 3\hat{j}$
2. $12\hat{i} + 16\hat{j}$
3. $16\hat{i} +8\hat{j}$
4. $3\hat{i} + 4\hat{j}$

Question Number : 54 Question Id : 6780944657 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $|\vec{A} \times \vec{B}| = K(AB)$ then angle between $\vec{A}$ and $\vec{B}$ is

Options :

1. $\cos^{-1}K$
2. $\cos^{-1}(1/K)$
3. $\sin^{-1}K$
4. $\sin^{-1}(1/K)$

Question Number : 55 Question Id : 6780944658 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cricket ball is thrown at a speed of 28 m/s in a direction 30^0 above the horizontal. The maximum height reached by the ball is

Options :

1. 10 m
2. 20 m
3. 30 m
4. 40 m

Question Number : 56 Question Id : 6780944659 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two bodies are projected at angles of 45^0 and 60^0 with the horizontal with same velocity simultaneously. Ratio of their horizontal ranges is

Options :

1. $\sqrt{3}:2$
2. $2:\sqrt{3}$
3. 1:2
4. 2:1

Question Number : 57 Question Id : 6780944660 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A ball thrown by a boy is caught 2 seconds later by another at some distance away on the same level. If the angle of projection is 30^0, the velocity of projection is

Options :

1. 19.6 m/sec
2. 9.8 m/sec
3. 4.9 m/sec
4. 5.2 m/sec

Question Number : 58 Question Id : 6780944661 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 200 m wide river flows with a velocity of 5 m/sec. A man crosses the river in the shortest time of 25 sec. If there is no flow and he swims with the same velocity, the time taken to cross the river is

Options :

1. $\frac{200}{5\sqrt{3}}$ sec
2. 20 sec
3. 25 sec
4. $25\sqrt{2}$ sec

Question Number : 59 Question Id : 6780944662 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body of mass 1 Kg lies on an inclined plane of angle 60^0 to the horizontal. If the coefficient of friction is 0.4, the frictional force along the inclined plane is

Options :

1. 1.96 N
2. 0.98 N
3. 0.49 N
4. 0.245 N

Question Number : 60 Question Id : 6780944663 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A force of 20 Kg weight is required to just slide a wooden box weighing 50 Kg over ice. Then coefficient of static friction between the surfaces in contact is

Options :

1. 0.2

2. 0.4

3. 0.8

4. 0.1

Question Number : 61 Question Id : 6780944664 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cyclist comes to a skidding stop in 10m. During this process, the force on the cycle due to the road is 200N and is directly opposed to the motion. The work done by the road on the cycle is

Options :

1. 1000 J

2. 2000J

3. -1000J

4. -2000J

Question Number : 62 Question Id : 6780944665 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A sphere of mass 4 Kg is dropped from a certain height. After 5s, its kinetic energy is ($g=10\ m/s^2$)

Options :

1. 5J

2. 50 J

3. 5 KJ

4. 50 KJ

Question Number : 63 Question Id : 6780944666 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An elevator weighing 500 kg is to be lifted up at a constant velocity of 0.20 m/s. What would be the minimum power of the motor to be used?

Options :

1. 100 W

2. 500 W

3. 980 W

4. 900 W

Question Number : 64 Question Id : 6780944667 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At t=0, the displacement of a particle in SHM is half its amplitude. Its initial phase is (referring to mean position)

Options :

1. $\frac{\pi}{6}$

2. $\frac{\pi}{3}$

3. $\frac{2\pi}{3}$

4. $\frac{\pi}{2}$

Question Number : 65 Question Id : 6780944668 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of seconds pendulum is 100 cm. To have a period half of this value, the length is to be reduced by

Options :

1. 25 cm

2. 75 cm

3. 50 cm

4. 100 cm

Question Number : 66 Question Id : 6780944669 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Inside a big hall, the reverberation time is

Options :

1. directly proportional to volume

2. inversely proportional to sound absorption

both directly proportional to volume

and

inversely proportional to sound absorption

3.

depends on temperature

4.

Question Number : 67 Question Id : 6780944670 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The voice of lion is different from that of a mosquito because

Options :

1. the sounds have different pitch

2. they are of different size

3. the two voices travel with different velocities

4. the sounds have different phases

Question Number : 68 Question Id : 6780944671 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A car is travelling at $\frac{v}{10}$ m/s and sounds horn of frequency 990 Hz. The apparent frequency heard by a police chasing the car at $\frac{v}{9}$ m/s (v is the velocity of sound) is

Options :

1. 990 Hz

2. 900 Hz

3. 100 Hz

4. 1000Hz

Question Number : 69 Question Id : 6780944672 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When ice cube melts and becomes water, the ice-water system undergoes a change such that

Options :

1. entropy of the system decreases and internal energy decreases

2. entropy of the system decreases and internal energy increases

3. entropy of the system increases and internal energy increases

4. entropy of the system increases and internal energy decreases

Question Number : 70 Question Id : 6780944673 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A mass of 300 gm falls from a height of 3 m(g=9.8 m/s^2). Assuming that the whole energy is converted into heat, the amount of heat produced is

Options :

1. 2 cal

2. 2.1 cal

3. 4 cal

4. 4.2 cal

Question Number : 71 Question Id : 6780944674 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During an adiabatic expansion of 2 moles of a gas, the change in internal energy was found to be equal to 100 J. The work done during the process will be equal to

Options :

1. zero

2. -100 J

3. 200 J

4. 100 J

Question Number : 72 Question Id : 6780944675 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pressure and density of a diatomic gas ($\gamma = \frac{7}{5}$) change adiabatically from (P,d) to (P^1,d^1). If $\frac{d^1}{d} = 32$, then $\frac{P^1}{P}$ is

Options :

1. 128

2. 32

3. 256

4. 64

Question Number : 73 Question Id : 6780944676 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Boyle's law holds good for an ideal gas during

Options :

1. isobaric changes

2. isothermal changes

3. isochoric changes

4. isotopic changes

Question Number : 74 Question Id : 6780944677 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The threshold frequency of metal is υ_0. When a light of frequency 4 υ_0 is incident on metal then the $K.E_{max}$ of emitted electrons is

Options :

1. $2\upsilon_0 h$

2. $3\upsilon_0 h$

3. $4\upsilon_0 h$

4. $\upsilon_0 h$

Question Number : 75 Question Id : 6780944678 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Superconductors are _____ materials

Options :

1. dielectric

2. paramagnetic

3. ferromagnetic

4. diamagnetic

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 76 Question Id : 6780944679 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Pauli exclusion principle is concerned with

Options :

1. Energy of orbital.
2. Spin of electron.
3. Energy of electron
4. Angular momentum of electron

Question Number : 77 Question Id : 6780944680 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to Bohr's model of hydrogen atom, the following is quantized

Options :

1. Linear momentum
2. Linear velocity
3. Angular momentum
4. Angular velocity

Question Number : 78 Question Id : 6780944681 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How many 'd' – orbitals have two perpendicular nodal planes

Options :

1. Two
2. Three
3. Four
4. Five

Question Number : 79 Question Id : 6780944682 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In sodium chloride crystal, each Na^+ ion is surrounded by

Options :

1. Two Cl^- ions
2. Four Cl^- ions
3. Six Cl^- ions
4. Eight Cl^- ions

Question Number : 80 Question Id : 6780944683 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following molecule contains a π – bond

Options :

1. H_2
2. O_2
3. F_2
4. HCl

Question Number : 81 Question Id : 6780944684 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following is insoluble in water?

Options :

1. Alcohol
2. Ammonia
3. Benzene
4. Acetone

Question Number : 82 Question Id : 6780944685 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of 2.3 M H_2SO_4 solution is

Options :

1. 0.46N
2. 0.23 N
3. 2.3 N

4. 4.6N

Question Number : 83 Question Id : 6780944686 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

8 grams of substance of molecular weight 40 is dissolved in 250 g of water. Then the **molality** of the solution is

Options :

1. 0.4

2. 0.8

3. 0.2

4. 0.6

Question Number : 84 Question Id : 6780944687 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pH value of 0.05M $Ba(OH)_2$ solution is

Options :

1. 10

2. 12

3. 13

4. 11

Question Number : 85 Question Id : 6780944688 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following molecule is not a Lewis Base?

Options :

1. H_2O

2. BF_3

3. NH_3

4. CO

Question Number : 86 Question Id : 6780944689 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During the electrolysis of brine, 710 g of Cl_2 was liberated at anode. The weight of NaOH formed

Options :

1. 800 g
2. 400 g
3. 80 g
4. 40 g

Question Number : 87 Question Id : 6780944690 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the Danniel cell, which electrode acts as anode?

Options :

1. Cu
2. Hg
3. Zn
4. Pt

Question Number : 88 Question Id : 6780944691 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The molar conductance of HCl is more than that of NaCl because

Options :

1. NaCl is more polar than KCl
2. NaCl is ionic while HCl is covalent
3. Ionic mobility of H^+ is more than that of Na^+
4. H^+ get hydrated.

Question Number : 89 Question Id : 6780944692 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The units for electrochemical equivalent are

Options :

1. grams
2. grams ampere
3. Coulomb
4. Grams per coulomb

Question Number : 90 Question Id : 6780944693 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Zeolite softening process removes

Options :

1. Only permanent hardness of water
2. Only temporary hardness of water
3. Both temporary and permanent hardness of water
4. The dissolved gases in permanent hard water.

Question Number : 91 Question Id : 6780944694 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The permanent hardness of water is caused by the presence of

Options :

1. Bicarbonates of Ca and Mg
2. Carbonates of Na and K
3. Chlorides and Sulphates of Ca and Mg.
4. Phosphates of Na and K

Question Number : 92 Question Id : 6780944695 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The secondary treatment of water uses _____ to consume wastes in water.

Options :

1. Filtration
2. Sedimentation
3. Chemicals
4. Microorganisms

Question Number : 93 Question Id : 6780944696 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Difficult to monitor and very dangerous form of corrosion is

Options :

1. Galvanic
2. Pitting

3. Crevice

4. Stress

Question Number : 94 Question Id : 6780944697 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When Pt and Co are electrically connected, which one gets corroded?

Options :

1. Co

2. Pt

3. None

4. both

Question Number : 95 Question Id : 6780944698 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What rubber was invented when Dr. Joseph C. Patrick tried to make antifreeze?

Options :

1. Methyl rubber

2. Chloroprene

3. Bruna N

4. Thiokol

Question Number : 96 Question Id : 6780944699 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The first plastic ever synthesized was called _____.

Options :

1. Bakelite

2. Nylon

3. Dacron

4. Cellulose

Question Number : 97 Question Id : 6780944700 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is a brand of polyester textile fiber that is wrinkle resistant and strong

Options :

1. Cellulose
2. Dacron
3. Bakelite
4. Nylon

Question Number : 98 Question Id : 6780944701 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Water gas is a mixture of

Options :

1. $H_2 + CO$
2. $N_2 + CO$
3. $H_2 + CO_2$
4. $H_2 + CH_4$

Question Number : 99 Question Id : 6780944702 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a greenhouse gas?

Options :

1. CO
2. CO_2
3. water vapour
4. CH_4

Question Number : 100 Question Id : 6780944703 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Burning of fossil fuels causes

Options :

1. Global warming
2. Ozone depletion
3. Acid rain
4. Eutrophication

Number of Questions:	100
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 101 Question Id : 6780944704 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The material which exhibits same elastic properties in all directions is called

Options :

1. Isotropic
2. Orthotropic
3. Homogeneous
4. Elastic

Question Number : 102 Question Id : 6780944705 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The type of failure of a material after number of cycles of repeated load is

Options :

1. Brittle failure
2. Ductile failure
3. Fatigue failure
4. Impact failure

Question Number : 103 Question Id : 6780944706 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a member subjected to tensile load, the strain in longitudinal direction is 0.25 and the strain in lateral direction is 0.05. The Poisson's ratio of the material is

Options :

1. 0.0125
2. 0.02
3. 0.20
4. 5

Question Number : 104 Question Id : 6780944707 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The modulus of rigidity is defined as the ratio of

Options :

1. Lateral strain to longitudinal strain

2. Compressive stress to compressive strain

3. Tensile stress to tensile strain

4. Shear stress to shear strain

Question Number : 105 Question Id : 6780944708 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The change in elongation of a bar due to its self weight is

Options :

1. proportional to length

2. proportional to square of length

3. inversely proportional to length

4. inversely proportional to square of length

Question Number : 106 Question Id : 6780944709 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the load P is applied suddenly on the body having cross sectional area A, length L and modulus of elasticity E, then the maximum stress induced in the body is

Options :

1. $\frac{P}{A}$

2. $\frac{2P}{A}$

3. $\frac{PL}{AE}$

4. $\frac{2PL}{AE}$

Question Number : 107 Question Id : 6780944710 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A prismatic beam ABC is simply supported at points A and B spaced 6 m apart and has an overhang BC of 2 m. A uniformly distributed load of 20 kN/m acting over the entire length AC and a concentrated load of 50 kN acting at C. The bending moment at support B is

Options :

1. 0

2. 120 kNm

3. 140 kNm

4. 150 kNm

Question Number : 108 Question Id : 6780944711 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cantilever beam of span L is subjected to concentrated load W at the free end. Which of the following is correct?

Options :

1. zero BM at free end and zero SF at the free end

2. maximum BM at free end and maximum SF at the free end

3. zero BM at fixed end and zero SF at the fixed end

4. maximum BM at fixed end and maximum SF at fixed end.

Question Number : 109 Question Id : 6780944712 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported beam of span L is subjected to a uniformly distributed load of w /m over left half of the span. The bending moment at mid span is

Options :

1. $\frac{wL^2}{16}$

2. $\frac{wL^2}{8}$

3. $\frac{wL^2}{4}$

4. zero

Question Number : 110 Question Id : 6780944713 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a simply supported beam, the maximum bending moment occurs at a point where

Options :

1. the load is maximum

2. the load changes sign

3. the shear force is maximum

4. the shear force changes sign

Question Number : 111 Question Id : 6780944714 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a beam of uniform cross section is subjected to a uniform bending moment throughout, then the deflected shape of the beam is a

Options :

1. parabola
2. cubic parabola
3. linear
4. circular arc

Question Number : 112 Question Id : 6780944715 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At the neutral axis of a loaded beam of rectangular section

Options :

1. bending stress is zero and shear stress is maximum
2. bending stress is zero and shear stress is zero
3. bending stress is maximum and shear stress is maximum
4. bending stress is maximum and shear stress is zero

Question Number : 113 Question Id : 6780944716 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a simply supported beam of rectangular cross section 100 mm×200 mm, the bending stress is limited to 12 N/mm^2. The moment of resistance of the beam is

Options :

1. 4 kNm
2. 8 kNm
3. 12 kNm
4. 16 kNm

Question Number : 114 Question Id : 6780944717 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The radius of curvature of the beam with usual notations is equal to

Options :

1. $\frac{ME}{I}$
2. $\frac{M}{EI}$

3. $\frac{EI}{M}$

4. $\frac{MI}{E}$

Question Number : 115 Question Id : 6780944718 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of maximum shear stress to average shear stress in a beam of circular cross section is

Options :

1. 1.25

2. 1.33

3. 1.5

4. 1.72

Question Number : 116 Question Id : 6780944719 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A beam of rectangular section 100 mm wide and 200 mm deep carries a shear force of 400 kN. The maximum shear stress in the beam is

Options :

1. 20 N/mm^2

2. 30 N/mm^2

3. 33 N/mm^2

4. 40 N/mm^2

Question Number : 117 Question Id : 6780944720 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a beam subjected to transverse shear force, the shear stress in the upper fibre will be

Options :

1. zero

2. minimum

3. maximum

4. depends on the data

Question Number : 118 Question Id : 6780944721 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a shaft is subjected to pure twisting, the type of stress developed in the shaft is

Options :

1. Axial stress
2. Shear stress
3. Normal stress
4. Bending stress

Question Number : 119 Question Id : 6780944722 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Polar moment of inertia of a solid circular shaft is

Options :

1. twice the area of cross section
2. four times the area of cross section
3. twice the moment of inertia
4. four times the moment of inertia

Question Number : 120 Question Id : 6780944723 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A solid circular shaft of length L and diameter D with modulus of rigidity G and polar moment of inertia J is subjected to a torque T. The angle of twist θ is

Options :

1. $\theta = \frac{TJ}{GL}$
2. $\theta = \frac{TG}{JL}$
3. $\theta = \frac{TL}{GJ}$
4. $\theta = \frac{GL}{TJ}$

Question Number : 121 Question Id : 6780944724 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported beam of span L is subjected to uniformly distributed load of w /m throughout the span. The slope of the support is

Options :

1. $\frac{wL^2}{16EI}$
2. $\frac{wL^3}{16EI}$
3. $\frac{wL^2}{24EI}$
4. $\frac{wL^3}{24EI}$

Question Number : 122 Question Id : 6780944725 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the depth of a beam is doubled, the maximum deflection for a given loading will be

Options :

1. halved
2. doubled
3. reduced by 4 times
4. reduced by 8 times

Question Number : 123 Question Id : 6780944726 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cantilever beam is subjected to a uniformly distributed load of w per m throughout. If the deflection and slope at the free end are 15 mm and 0.01 radians respectively, then the length of the beam is

Options :

1. 1.5 m
2. 1.6 m
3. 2.0 m
4. 3.0 m

Question Number : 124 Question Id : 6780944727 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported beam of length L carries a central concentrated load W. Another beam B is loaded with a uniformly distributed load such that the total load on the beam is W. The ratio of maximum deflections between beam A to B is

Options :

1. $\frac{8}{5}$
2. $\frac{5}{8}$
3. $\frac{4}{5}$
4. $\frac{5}{4}$

Question Number : 125 Question Id : 6780944728 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a deflected beam, the differential equation is

Options :

1. $EI\frac{d^2y}{dx^2} = M$
2. $EI\frac{d^3y}{dx^3} = M$
3. $M\frac{d^2y}{dx^2} = EI$
4. $M\frac{d^3y}{dx^3} = EI$

Question Number : 126 Question Id : 6780944729 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A fixed beam of length L and flexural rigidity EI is subjected to a uniformly distributed load of w per m throughout the span. The maximum deflection in the beam is

Options :

1. $\frac{1}{48}.\frac{wL^4}{EI}$
2. $\frac{1}{192}.\frac{wL^4}{EI}$
3. $\frac{5}{384}.\frac{wL^4}{EI}$

4. $\frac{1}{384}.\frac{wL^4}{EI}$

Question Number : 127 Question Id : 6780944730 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A propped cantilever AB of span L is fixed at A and propped at B is subjected to a uniformly distributed load of w per m throughout. The reaction of the prop is

Options :

1. $\frac{wL}{2}$
2. $\frac{5}{8}wL$
3. $\frac{3}{8}wL$
4. $\frac{3}{4}wL$

Question Number : 128 Question Id : 6780944731 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a fixed beam, at the fixed ends

Options :

1. both slope and deflection are zero
2. slope is zero and deflection is maximum
3. slope is maximum and deflection is zero
4. both slope and deflection are maximum

Question Number : 129 Question Id : 6780944732 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A column of length L and flexural rigidity EI is fixed at one end and free at the other end. The Euler's crippling load is

Options :

1. $\frac{\pi^2 EI}{L^2}$
2. $\frac{2\pi^2 EI}{L^2}$

3. $\frac{2\pi^2 EI}{2L^2}$

4. $\frac{\pi^2 EI}{4L^2}$

Question Number : 130 Question Id : 6780944733 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of effective length of column to its least radius of gyration is known as

Options :

1. section modulus

2. slenderness ratio

3. crippling factor

4. buckling factor

Question Number : 131 Question Id : 6780944734 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The effective length of column fixed at both ends is equal to

Options :

1. $0.5L$

2. L

3. $1.414L$

4. $2L$

Question Number : 132 Question Id : 6780944735 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A column that fails primarily due to buckling is known as a

Options :

1. short column

2. medium column

3. long column

4. weak column

Question Number : 133 Question Id : 6780944736 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Rankine's formula holds good for

Options :

1. short columns only

2. long columns only

3. both short and long columns

4. weak columns

Question Number : 134 Question Id : 6780944737 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The radius of gyration of solid square column of side a is

Options :

1. $\frac{a}{2}$

2. $\frac{a}{\sqrt{3}}$

3. $\frac{a}{2\sqrt{3}}$

4. $\frac{2a}{\sqrt{3}}$

Question Number : 135 Question Id : 6780944738 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the Euler load for a steel column is 600 kN and crushing load is 1000 kN, the Rankine's load is equal to

Options :

1. 375 kN

2. 600 kN

3. 1000 kN

4. 1600 kN

Question Number : 136 Question Id : 6780944739 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a masonry dam of base width b, at which location the resultant force should strike the base so as to avoid tension anywhere in the section?

Options :

1. middle fourth

2. middle third

3. at the toe

4. at the heel

Question Number : 137 Question Id : 6780944740 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If ϕ is the angle of internal friction of the soil, then Rankine's formula for active earth pressure coefficient is

Options :

1. $\frac{1+\sin\phi}{1-\sin\phi}$

2. $\frac{1-\sin\phi}{1+\sin\phi}$

3. $\frac{1+\sin^2\phi}{1-\sin^2\phi}$

4. $\frac{1-\sin^2\phi}{1+\sin^2\phi}$

Question Number : 138 Question Id : 6780944741 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The forces in the members of the statically determinate pin jointed trusses can be obtained by

Options :

1. Euler's method

2. Rankine's method

3. Moment area method

4. Method of joints

Question Number : 139 Question Id : 6780944742 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a pin jointed determinate truss, if m is number of members, j is number of joints and r is number of reaction components, which of the following relation holds good?

Options :

1. $m+r=2j$

2. $m+r<2j$

3. $m+r>2j$

4. $m+j=2r$

Question Number : 140 Question Id : 6780944743 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of joint equilibrium equations available for the analysis of pin jointed plane trusses is

Options :

1. 0
2. 1
3. 2
4. 3

Question Number : 141 Question Id : 6780944744 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

M 20 grade of concrete indicates a compressive strength of 20 MPa by testing

Options :

1. 100 mm cubes at 28 days
2. 150 mm diameter cylinders at 28 days
3. 150 mm cubes at 28 days
4. 100 mm diameter cylinders at 28 days

Question Number : 142 Question Id : 6780944745 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Flexural tensile strength of M 25 grade concrete is

Options :

1. 1.5 MPa
2. 2.5 MPa
3. 3.5 MPa
4. 5.0 MPa

Question Number : 143 Question Id : 6780944746 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In limit state design of concrete structures, the strain distribution is assumed to be

Options :

1. Linear
2. Rectangular

3. Parabolic

4. Hyperbolic

Question Number : 144 Question Id : 6780944747 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If f_{ck} is the characteristic compressive strength of concrete and σ is the standard deviation, then the mean target strength f_t is given by

Options :

1. $f_t = f_{ck} - 0.65\sigma$

2. $f_t = f_{ck} + 0.65\sigma$

3. $f_t = f_{ck} - 1.65\sigma$

4. $f_t = f_{ck} + 1.65\sigma$

Question Number : 145 Question Id : 6780944748 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum permissible area of steel reinforcement in reinforced concrete beams is

Options :

1. 4% of effective cross sectional area

2. 4% of gross cross sectional area

3. 6% of gross cross sectional area

4. 0.12% of gross cross sectional area

Question Number : 146 Question Id : 6780944749 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If any tension reinforcement in a beam reaches its yield stress during loading before the concrete in the compression zone fails due to crushing, the beam is said to be

Options :

1. balanced

2. under reinforced

3. over reinforced

4. Non homogeneous

Question Number : 147 Question Id : 6780944750 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The effective flange width of T beams spaced at 3.5 m over 15.0 m span with 100 mm thick flange and 300 mm wide web is

Options :

1. 2.90 m
2. 3.25 m
3. 3.40 m
4. 3.50 m

Question Number : 148 Question Id : 6780944751 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The partial safety factor for steel is

Options :

1. 1.0
2. 1.15
3. 1.5
4. 1.85

Question Number : 149 Question Id : 6780944752 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum shear reinforcement provided for reinforced concrete rectangular beams as per IS: 456-2000, is

Options :

1. $\frac{A_{sv}}{b.S_v} \geq \frac{0.4}{0.87\, f_y}$
2. $\frac{A_{sv}}{b.S_v} < \frac{0.4}{0.87\, f_y}$
3. $\frac{A_{sv}}{b.S_v} \leq \frac{0.4}{f_y}$
4. $\frac{A_{sv}}{b.S_v} \geq \frac{0.46}{f_y}$

Question Number : 150 Question Id : 6780944753 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Maximum spacing of vertical shear reinforcement measured along the axis of the reinforced concrete beam shall not exceed

Options :

1. $0.5d$ or 300 mm
2. $0.5d$ or 250 mm
3. $0.75d$ or 300 mm
4. $0.75d$ or 250 mm

Question Number : 151 Question Id : 6780944754 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a cantilever slab, main reinforcement is placed at

Options :

1. top of the slab
2. the neutral axis
3. bottom of the slab
4. below the distribution steel

Question Number : 152 Question Id : 6780944755 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a rectangular slab corner continuous on all four sides, the amount of torsion reinforcement required to be provided is

Options :

1. 0%
2. 37.5% of main steel reinforcement
3. 50% of main steel reinforcement
4. 75% of main steel reinforcement

Question Number : 153 Question Id : 6780944756 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The RCC columns are designed for a minimum eccentricity of

Options :

1. 5 mm
2. 10mm
3. 20mm
4. 25mm

Question Number : 154 Question Id : 6780944757 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the design of simply supported RCC beams, the maximum value of span to effective depth ratio is

Options :

1. 7
2. 20
3. 26
4. 40

Question Number : 155 Question Id : 6780944758 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The load carrying capacity of a helically reinforced column as compared to that of a column with lateral ties is

Options :

1. 5% less
2. 10% less
3. 10% more
4. 5% more

Question Number : 156 Question Id : 6780944759 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to IS:456-2000, the ultimate load carrying capacity of the column is

Options :

1. $P_u = 0.4 f_{ck}.A_c + 0.67 f_y.A_{sc}$
2. $P_u = 0.4 f_{ck}.A_c + 0.75 f_y.A_{sc}$
3. $P_u = 0.3 f_{ck}.A_c + 0.67 f_y.A_{sc}$
4. $P_u = 0.4 f_{ck}.A_c + 0.87 f_y.A_{sc}$

Question Number : 157 Question Id : 6780944760 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A reinforced cement concrete column is considered as long, if the ratio of the effective length of column to its least lateral dimension exceeds

Options :

1. 3

2. 6

3. 8

4. 12

Question Number : 158 Question Id : 6780944761 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The thickness of footing at the edge should not be less than

Options :

1. 100 mm

2. 150 mm

3. 200 mm

4. 250 mm

Question Number : 159 Question Id : 6780944762 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Generally, the overall depth of the footing is governed by

Options :

1. bending moment

2. one way shear

3. two way shear

4. 1.5 times bending moment

Question Number : 160 Question Id : 6780944763 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum clear cover for footings as per IS: 456-2000 is

Options :

1. 25 mm

2. 40 mm

3. 50 mm

4. 75 mm

Question Number : 161 Question Id : 6780944764 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The most accurate method for the measurement of the base line is

Options :

1. chain

2. Invar tape

3. Tacheometry

4. EDM

Question Number : 162 Question Id : 6780944765 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is an obstacle to chaining but not to ranging?

Options :

1. Hill

2. Ground

3. River

4. Building

Question Number : 163 Question Id : 6780944766 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The fore bearings of the sides of a triangle AB, BC and CA are 40°, 160° and 280° respectively. The triangle is

Options :

1. right angled

2. an equilateral

3. an isosceles

4. an obtuse angled

Question Number : 164 Question Id : 6780944767 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The true bearing of a line is S 25°20' E. If the declination is 5°40' E, then the magnetic bearing is

Options :

1. S 31°0' E

2. S 19°40' E

3. N 31°0' W

4. N 19°40' W

Question Number : 165 Question Id : 6780944768 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the whole circle bearing of a line AB is 150°, then the back bearing of the line in quadrantal system is

Options :

1. S 30° E
2. S 30° W
3. N 30° E
4. N30° W

Question Number : 166 Question Id : 6780944769 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The observed bearings of a traverse are given below:

Line	Fore Bearing	Back Bearing
AB	45°30'	225°30'
BC	110°30'	290°15'
CD	202°15'	22°30'
DE	320°45'	140°45'

The station most likely to be affected by the local attraction is

Options :

1. A
2. B
3. C
4. D

Question Number : 167 Question Id : 6780944770 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The process of turning the telescope of a theodolite in horizontal plane is called

Options :

1. Transiting

2. Swinging

3. Plunging

4. Reversing

Question Number : 168 Question Id : 6780944771 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The latitude of a line is +100 m and departure is -100 m. The reduced bearing of a line is

Options :

1. N 45° W

2. N 45° E

3. S 45° W

4. S 45° E

Question Number : 169 Question Id : 6780944772 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following observations were from reciprocal levelling

Instrument at	Staff reading at station	
	A	B
A	1.450	1.695
B	0.600	0.820

Which of the following is correct?

Options :

1. Point A is higher than point B

2. Point A is lower than point B

3. Point A and point B are at same elevation

4. the given data is insufficient.

Question Number : 170 Question Id : 6780944773 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A leveling station is a place where

Options :

1. the level is set up
2. The level staff is held
3. both BS and FS are taken
4. Permanent adjustments are done

Question Number : 171 Question Id : 6780944774 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a simple circular curve of radius R, the deflection angle between the tangents is 60°. The length of tangent is

Options :

1. $R\sin 30^0$
2. $R\sin 60^0$
3. $R\tan 30^0$
4. $R\tan 60^0$

Question Number : 172 Question Id : 6780944775 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The constant vertical distance between two adjacent contours is known as

Options :

1. Horizontal equivalent
2. Horizontal interval
3. Vertical equivalent
4. Contour interval

Question Number : 173 Question Id : 6780944776 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Planimeter is used for measuring

Options :

1. Volume
2. Area
3. slope angle
4. contour gradient

Question Number : 174 Question Id : 6780944777 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following cannot be achieved by remote sensing

Options :

1. Detection of forest fires
2. Detection of pollutants
3. Prevention of earth quakes
4. Land use pattern

Question Number : 175 Question Id : 6780944778 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The position of a point can be located in GPS on receiving signals from at least

Options :

1. 1 satellite
2. 2 satellites
3. 3 satellites
4. 4 satellites

Question Number : 176 Question Id : 6780944779 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The property of a liquid by virtue of which the molecules of the liquid remain attached to each other is

Options :

1. Adhesion
2. Cohesion
3. Capillarity
4. Surface tension

Question Number : 177 Question Id : 6780944780 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A differential manometer measures

Options :

1. absolute pressure at a point
2. local atmospheric pressure
3. difference in pressure between two points

4. difference in total energy between two points

Question Number : 178 Question Id : 6780944781 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The flow of a liquid at a constant rate in a conically tapered pipe is classified as

Options :

1. steady uniform flow
2. unsteady uniform flow
3. unsteady, non uniform flow
4. steady, non uniform flow

Question Number : 179 Question Id : 6780944782 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of continuity of flow is based on the principle of the conservation of

Options :

1. mass
2. force
3. work
4. momentum

Question Number : 180 Question Id : 6780944783 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During the opening of valve, the flow is

Options :

1. laminar
2. unsteady
3. uniform
4. rotational

Question Number : 181 Question Id : 6780944784 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a venturimeter is inclined from horizontal position, its reading

Options :

1. increases
2. decreases
3. remains the same
4. changes

Question Number : 182 Question Id : 6780944785 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For flow through an orifice, the coefficient of discharge (C_d), the coefficient of velocity (C_v) and the coefficient of contraction (C_c) are related as

Options :

1. $C_d = C_v + C_c$
2. $C_d = C_v . C_c$
3. $C_c = C_v . C_d$
4. $C_v = C_c . C_d$

Question Number : 183 Question Id : 6780944786 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the error in reading the head over a rectangular notch is 1% , the resulting error in computed discharge is

Options :

1. 1%
2. 1.5%
3. 2.0%
4. 2.5%

Question Number : 184 Question Id : 6780944787 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When pipes are attached end to end in series, then the

Options :

1. discharge is same in all the pipes
2. head loss is same in all the pipes
3. friction losses are reduced
4. velocity of flow is same in all the pipes

Question Number : 185 Question Id : 6780944788 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Darcy's equation for frictional losses is expressed as

Options :

1. $h_f = \frac{fLV^2}{gD}$

2. $h_f = \frac{2fLV^2}{gD}$

3. $h_f = \frac{fLV^2}{2gD}$

4. $h_f = \frac{fLV^2}{4gD}$

Question Number : 186 Question Id : 6780944789 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a fluid between two parallel plates, the velocity is

Options :

1. uniform under steady state conditions

2. uniform under turbulent flow conditions

3. maximum at the mid depth of flow

4. maximum at the plate boundaries

Question Number : 187 Question Id : 6780944790 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a venturimeter, the divergent cone is

Options :

1. shorter than the converging cone

2. longer than the converging cone

3. equal in length to the converging cone

4. depending on the flowing fluid

Question Number : 188 Question Id : 6780944791 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The discharge through a trapezoidal channel is maximum when

Options :

1. top width = half of sloping side

2. top width = 1.5 times sloping side

3. sloping side = half of top width

4. sloping side = top width

Question Number : 189 Question Id : 6780944792 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A rectangular lined channel of width 5 m is used to carry water. The maximum discharge occurs when the depth of flow is

Options :

1. 2.5 m
2. 2.0 m
3. 1.67 m
4. 1.25 m

Question Number : 190 Question Id : 6780944793 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A turbine is a device which converts

Options :

1. Hydraulic energy to Mechanical energy
2. Hydraulic energy to Electrical energy
3. Electrical energy to Mechanical energy
4. Mechanical energy to Hydraulic energy

Question Number : 191 Question Id : 6780944794 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The base period of the crop is 100 days and duty of the canal is 1000 hectares per cumec. The depth of water will be

Options :

1. 0.864 cm
2. 8.64 cm
3. 86.4 cm
4. 864 cm

Question Number : 192 Question Id : 6780944795 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Kharif season is generally extends from

Options :

1. January-July
2. March-August

3. October-March

4. June-October

Question Number : 193 Question Id : 6780944796 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Water stored in the reservoir below the minimum pool level is called

Options :

1. Bank storage

2. Valley storage

3. Surcharge storage

4. Dead storage

Question Number : 194 Question Id : 6780944797 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The under sluices in diversion head works are provided to

Options :

1. control silt entry into the channel

2. avoid parallel flow to the weir

3. prevent hydraulic jump

4. prevent fish flow

Question Number : 195 Question Id : 6780944798 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The accurate estimate of average rainfall in a particular catchment area can be obtained by

Options :

1. Arithmetic mean method

2. Thiessen polygon method

3. Isohyetal method

4. Normal ratio method

Question Number : 196 Question Id : 6780944799 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The elementary profile of a gravity dam is

Options :

1. a rectangle
2. a trapezoidal
3. an equilateral triangle
4. a right angled triangle

Question Number : 197 Question Id : 6780944800 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The net free board is

Options :

1. difference of level between Maximum Water Level (MWL) and Full Reservoir Level (FRL)
2. difference of level between the top of dam and Maximum Water Level (MWL)
3. difference of level between the top of dam and Full Reservoir Level (FRL)
4. difference between the top of dam and bed level

Question Number : 198 Question Id : 6780944801 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The channel where silting and scouring needs no special attention is called as

Options :

1. Super passage
2. Kutter channel
3. Critical flow channel
4. Regime channel

Question Number : 199 Question Id : 6780944802 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to Lacy's theory, the wetted perimeter P is related to the discharge Q as

Options :

1. $4.75Q$
2. $4.75\sqrt{Q}$
3. $4.75Q^{3/2}$
4. $4.75Q^{5/2}$

Question Number : 200 Question Id : 6780944803 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Canal lining is essential to

Options :

1. minimize water losses
2. minimize silting
3. release water
4. store water